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# Fixing Faulty Cruise Control

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Published on: August 17, 2004

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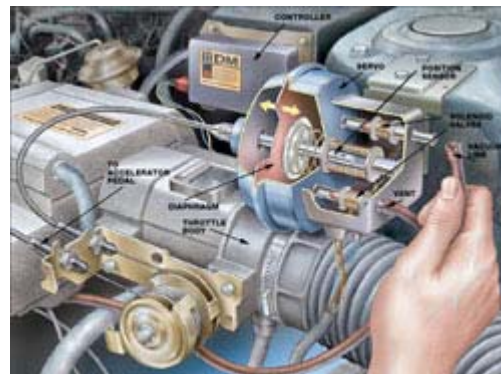
Alarmingly, the speedometer needle steadily winds down from 75 mph toward 50. Just as you uncurl your feet and try to accelerate back to traffic speeds, the vehicle downshifts with a lurch and abruptly climbs back to over 80 mph. So you tap the brakes and disengage the cruise control to avoid a conversation with one of the many law enforcement officers lurking behind every other billboard. Toggling the Resume switch settles things down, holding to a legal speed on both the uphill and downhill sections of the interstate. The kids in the back seat have stopped threatening to throw up, too. Then you look in your mirror 20 miles later and see the lights. Red and blue flashing lights. You're doing over 85 mph and, odds are, Smokey isn't going to believe you have the cruise set to 70. Time to find out why your cruise control has a mind of its own.

## IT'S NOT A BUG, IT'S A FEATURE

Does your cruise control fall out of engagement partway up steep hills? Actually, it will normally drop out if the engine has to work too hard, mainly because after a while there isn't enough vacuum left to pull in the servo after sustained near-wide-open-throttle. You'll just have to put your foot into it. Downshifting helps.

Does your Japanese car not remember the set speed after tollbooths? Unlike most American and European cars, some Toyotas and Hondas are designed not to remember their set speed if the vehicle speed falls below 25 mph, and you're supposed to accelerate the vehicle to your set speed and hit the Set button again. Annoying, but that's the way they were designed.

Do you have to ride the brakes on longer downhills to keep from

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**WHAT'S THAT HISS?:** Most common cause of erratic cruise control? Vacuum leaks caused by deteriorated hoses.

building up excess speed? That's normal too. The cruise control only has authority to reduce engine speed to idle. It doesn't activate the brakes. Modern cars, in an attempt to improve mileage, have very tall gear ratios, low-friction engine designs, low-rolling-resistance tires and optimized aerodynamics. That long downgrade outside of town may have accelerated your '60s-era Pontiac to only a couple of miles per hour above legal. But, it may well propel your new economy car to blatantly illegal velocities unless you intervene by braking or downshifting.

## SMOOTH AND STEADY

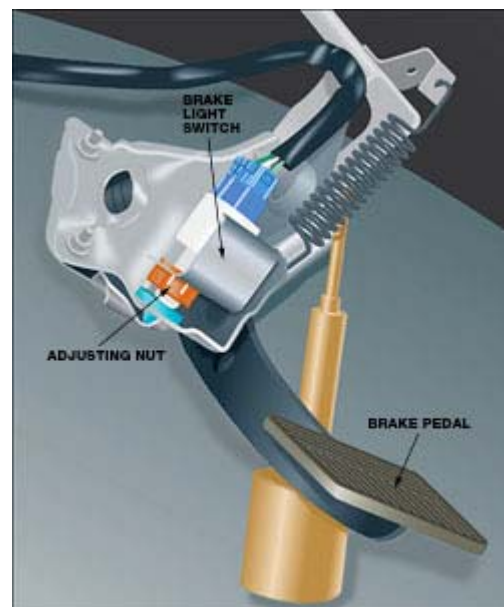
Cruise control on your vehicle is a terrific device. It substantially reduces the driver's workload on longer trips, and can save substantial amounts of fuel and expense over the life of the vehicle--until it stops working.

We'll get to the scenario of not holding a steady speed later, but here are a couple of things to check immediately if the cruise control is on strike.

Does the Cruise icon on the dash light up when you turn the switch on? Duh. Check the fuse. You may need to look in the owner's manual to see which one if it's not tagged on the fuse box cover. An aftermarket cruise may have an inline fuse holder in the wiring to the controller.

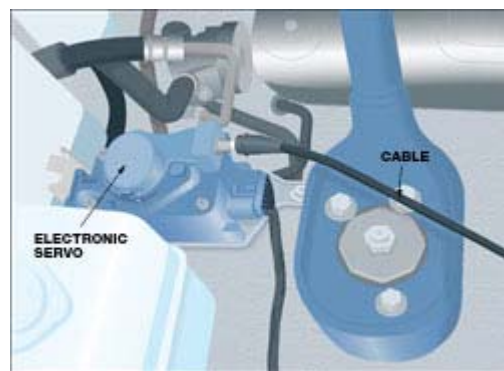
If there is power to the system, the next check is the brake lights. Brake lights? Yup, cruise controls have a switch to toggle them off when you touch the brake pedal, and many use the same switch as the brake lights. If one of the brake lights has failed, the cruise control thinks the brakes are on all the time and won't come on. Same result if the switch is incorrectly adjusted or broken or jammed. Wait, there's more--if your vehicle has a manual transmission, there's a similar switch on the clutch pedal. You may need to break out a test light or multimeter to verify the function of this array of switches. These switches usually are normally closed switches, and close their contacts when the pedal is depressed. We've seen several cases of intermittent cruise control dropout caused by a brake light switch that was adjusted very tight. Any small bump would jiggle the brake pedal down far enough to toggle the brake lights on for a brief instant--long enough to shut down the cruise. Adjusting the switch to specs (usually so the brake lights come on after the pedal travels 1/2 in.) fixed it.

Once you verify all of these things, it's time to look for more subtle causes. Check underhood. Inspect the linkage between the cruise control actuator and the throttle. It may be as simple as a toilet-tank bead chain or a separate throttle cable with its own actuator cam to



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WHOA, NELLIE!: If your brake light switch is incorrectly adjusted, your cruise control may not lock in. A burned-out brake light can do the same.



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WHAT'S THIS THING?: The cruise control servo motor could be anywhere in the engine compartment.

the throttle body. Look for disconnected or damaged wiring to the controller or actuator, particularly if it's an aftermarket system, which may have been installed by someone with poor mechanical skills.

Another obvious failure point is the vacuum line to the actuator. If it has fallen off, there's no vacuum to the actuator and no force can be applied to the throttle. We'll get ahead of ourselves here and mention that a vacuum line that looks fine may have a subtle leak caused by aging, brittle rubber or connections that don't seal well. A lot of the cruise controls we've seen with issues in regulating their speed correctly are fixed by simply replacing all the vacuum lines between the servo, vacuum reservoir (if there is one) and the intake manifold vacuum supply.

## CONTROL ISSUE WITH YOUR SERVO

There are two main components of the cruise control system: the controller and the servo.

The controller integrates all the inputs and tells the servo how far to actuate the throttle plates. Normally, there is no way you can service this item, so if you trace a problem to the controller, you'll have to buy a new one. A bad controller probably will require a service manual for specific diagnostics. You'll also need a scan tool to access any computer trouble codes to boot.

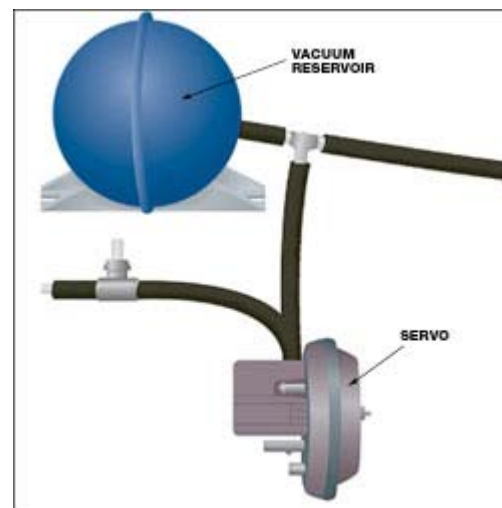
The servo does the work of moving the throttle blades to speed up the vehicle. Conventional systems are actuated by manifold vacuum. Check the linkage from the servo to the throttle to ensure it's properly hooked up and not binding or sticky. Inside the servo is a diaphragm that moves to pull on the linkage. Some older systems, used on cars or trucks that don't have throttle-position sensors, may have a rod that moves in and out of a magnetic coil to tell the controller the throttle position. There are also two electrically operated solenoid valves. One valve admits vacuum to the diaphragm chamber to add more throttle. The other bleeds air back into the chamber to reduce throttle. Normally, they will never be open at the same time, so if one is sticky or leaking, cruise control operation will be erratic at best. Check for leakage with a handheld vacuum pump. A leaky valve may benefit from a quick shot of silicone spray.

Diesels and some late models may use a servo that is completely electrical. These usually are mounted on the fenderwell or firewall, and are connected to the throttle by a second throttle cable. Other than keeping the cable lubricated and properly adjusted, there's not much to fiddle with. As always, check the shop manual for specifics on your vehicle.



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WHERE'S THIS THING?: Speed sensor may be buried under the dash near speedo head.



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SUCK IT UP: The vacuum reservoir provides an added source of vacuum for those long uphill grades.

Many late-model cars have throttle plates connected directly to an actuator controlled by the engine management computer. There is no physical connection between your right foot and the throttle blades (Scary, eh?), and there may or may not be a separate cruise control servo or controller.

### **HOW FAST WAS I GOING, OFFICER?**

If you still have no engagement, there may be an issue with the cruise control's speed input. Modern cars use information from the ABS's vehicle speed sensor (VSS) because the engine-management computer needs to know road speed. If your Check Engine light is on, the cruise may not work, especially if the VSS is malfunctioning. Older vehicles may use speed information from the speedometer. Aftermarket systems may resort to a ring of magnets clamped to a driveshaft or axle shaft, with a magnetic coil positioned nearby. If the magnets have fallen off or the coil has been smashed by a rock or road debris, there's no speed data for the controller.

### **URBAN LEGEND**

The legend has been related to us by all manner of people, including a couple of state police officers. Using the cruise control in rainy or slick conditions will make your car speed up uncontrollably, until you lose control and crash. It's a myth.

Engaging the cruise will not make the car speed up. The cruise will attempt to maintain a steady speed. If the wheels lose traction and the car starts to slow down, the cruise will speed up the engine to attempt to accelerate back to the set speed. This will make the drivewheels spin more briskly. The vehicle speed will go slower, regardless of how furiously the wheels spin. If you have a rear-wheel-drive car, the effect is to destabilize the vehicle, and you probably will spin out unless the vehicle regains traction in a reasonable length of time. A front-wheel-drive car with spinning tires will attempt to continue in a more or less straight line--which will make steering control dodgy at best.

Heavy rain or snow makes use of the cruise control inadvisable, but such conditions certainly won't make your car accelerate to ludicrous speeds while you hang on for dear life. If the cruise is engaged and you perceive a loss of traction, the best bet is to tap the brake to disengage the system, and then add just enough throttle to maintain steering until the vehicle slows down to a more appropriate speed.

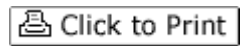
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